

A CLINICAL CONTRIBUTION TO THE KNOWL- EDGE OF TUBERCULAR DISEASES OF THE FEMALE URINARY TRACT.¹

WITH A REPORT OF SEVEN COMPLETE NEPHRO-URETERECTOMIES.

BY EDWARD J. ILL, M.D.,
OF NEWARK, NEW JERSEY.

THE origin of tubercular inflammation of the urinary tract is most frequently in the pelvis of the kidney or in the kidney itself. Thus far I have seen but one case (Case XI) where the beginning of the disease may have started in the bladder. The following case of the disease of the pelvis of the kidney could here be cited.

CASE I.—*Tubercular Inflammation of the Pelvis of the Right Kidney; Haematuria; Nephrectomy; Cure.*

Mrs. A. M., married ten years, aged forty-four years, has been in poor health since she ceased menstruating three years ago. She entered St. Michael's Hospital on January 22, 1903. Since November 24, 1902, has been passing bloody urine constantly, has had much backache and nausea, and a constant pain in the right loin, worse when sitting down. A catheterization of the ureters showed that the blood came from the right kidney. No tubercle bacilli were found, though repeatedly looked for by the bacteriologist. An exploratory operation was done January 29, and the kidney drawn out of the wound. It was rather a small organ. The pelvis of the kidney felt as though it contained a foreign body, and was opened by a longitudinal incision. A very firm blood-clot was all that was found.

The fear of continued haemorrhage prompted the removal of the kidney, which, with two inches of the ureter, was sent to the pathologist of the hospital, Dr. Teeter. He reported tubercular ulcerations in the pelvis of the kidney eroding some of the blood-vessels.

¹ Read before the New Jersey State Medical Society, June 24, 1903.

The patient thus far has since remained well and is much improved in health.

Not only does the resistance of the bladder to the tubercle bacillus seem great, but the bladder will readily throw off the disease as soon as the original focus has been removed, as is shown in the following cases.

CASE II.—Tubercular Left Kidney and Ureter; Extensive Tubercular Ulceration of the Base of the Bladder; Nephro-ureterectomy; Recovery; Normal Bladder at this Date.

Miss P., a seamstress, aged twenty-seven years, was sent April 27, 1899, by Dr. E. De L. Bradin, because for more than a year she had suffered from more or less pain in the left lumbar region, not severe enough to incapacitate her until a month ago. About February 1, 1899, she also began to have frequent and painful urination; lost strength and flesh. She passed urine every twenty or thirty minutes and was up and down day and night. Dr. Bradin soon discovered that she had pus in her urine as well as tubercle bacilli and connective-tissue particles. The number of the bacilli in the urine was very large.

An examination disclosed a very thick left ureter and several tubercular ulcerations at the base of the bladder and at the opening of the left ureter. There was slight rise of temperature but no hectic.

May 24, 1899, the left kidney and ureter were removed. It was found that she had a cheesy abscess of the kidney as large as a walnut, and the ureter was so much thickened that the lumen was nearly obliterated. She rapidly got well. For about three months tubercle bacilli were occasionally found in the urine, and since then she has remained well, having been married a year after the operation. At present her urine is normal, as is also her bladder.

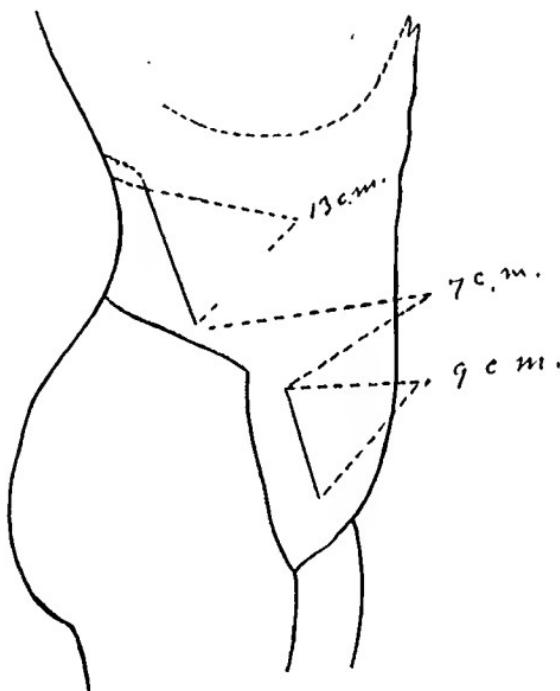
CASE III.—Tubercular Right Kidney and Ureter; Tubercular Ulceration at the Meatus of the Right Ureter and its Surroundings; Nephro-ureterectomy; Recovery; Urine Normal at this Date.

Mrs. S. S., Russian, aged twenty-four years, married, has two children and is in good general health, presented herself June 26, 1901, through the kindness of Dr. Parsonette, complaining of

painful urination. There had been pains in the right iliac region for some months.

Dr. R. N. Connelly found her urine to contain pus, tubercle bacilli, and shreds of cellular tissue. To Dr. Connelly I am much indebted for many favors in these cases. Upon catheterization of the ureters, it is found that the left kidney is healthy and the right kidney is diseased. The endoscope shows the bladder to contain a few tubercular ulcerations about the right ureter.

FIG. 1.



Case III, showing location of incisions for removal of ureter.

Typical nephro-ureterectomy performed June 28, as in the foregoing case. The incisions were thirteen centimetres long in the loin and nine centimetres long in the right iliae region, leaving a bridge between of seven centimetres. She made an afebrile convalescence, and was discharged cured in twenty-six days. She became pregnant within six months, and was delivered by

Dr. Parsonette in a normal labor. At no time did the urine show anything abnormal during the pregnancy nor since.

CASE IV.—Extensive Tubercular Ulceration of the Right Kidney and Ureter; Extensive Ulceration of the Bladder; Nephro-ureterectomy; Recovery; Urine perfectly Normal December 4, 1902.

Miss E. B., aged twenty-two years; single; stenographer, and of good family history. She presented herself in fair general health April 6, 1901, complaining of frequent and painful urination since three months and constant pain in the right lumbar region. On questioning, it is discovered that she never eats meat nor drinks milk, living on eggs, vegetables, and cereals. The pain was so great that she was unable to follow her employment. Her urine was found to contain thick, heavy, tubercle bacilli and shreds of cellular tissue and pus.

The right kidney could not be made out, but the right ureter was much thickened, and many tubercular ulcerations were present in the posterior lower half of the bladder. Catheterization of the ureters showed the disease to be confined to the right side. The left kidney seemed normal.

Operation, April 9, 1901.—Lumbar incision over the right kidney, that is, from the end of the last rib downward and forward for about nine centimetres. The muscles were not cut, but all fibres were separated.

The kidney was a large one and brought out with some difficulty. The vessels were ligated with a Grad ligature, and the ureter gradually enucleated as far as the finger could reach.

An incision of six centimetres was then made at the edge of the rectus in the right iliac fossa, parallel with Poupart's ligament and down to the peritoneum. The separation of the ureter was continued through the opening until its insertion into the bladder was reached. It was then cut between two ligatures with the cautery, and the lower stump brought out through the vagina, where it was cut off with the cautery close to the bladder after ligating with catgut.

The very large kidney was found to be filled with miliary and large tubercles and several small abscesses. The ureter was very much thickened, so as to appear about like a steel sound, No. 36 French.

Both wounds were drained with gauze. On the next day

the patient's temperature rose to 104° F. and the pulse to 140 per minute. The wounds were opened all over, but no discharge showed itself. She was given twenty cubic centimetres of anti-streptococcens serum without any result, and went along for some months with a bad septic condition, of which she eventually recovered, and is perfectly well at this date. Her urine and bladder were last examined December 4, 1902, and found to be perfectly normal in every respect. At that time she appeared to be the picture of health.

From the history of these cases it becomes apparent that the diseased portion of the bladder may regain its health, and resection of the secondarily diseased portion is not a necessity. Even the ureter will apparently recover, as is shown by the following case.

CASE V.—Extensive Tubercular Destruction of the Right Kidney and Ureter; Tubercular Ulceration of the Bladder; Nephrectomy; Recovery.

Miss R. W., aged thirty-five years, single, seamstress, of good family history, was sent through the kindness of Dr. Gage March 1, 1901. This woman had been suffering for a year from great pain in the right lumbar region, running down through the right iliac region into the bladder. There was frequent and painful urination. On examination the urine was found loaded with pus and tubercle bacilli and tissue particles. The urine was ammoniacal and gelatinous. Her general condition was very miserable. She had night sweats and hectic, and was much emaciated. Her temperature reached 102° F. and pulse as much as 120 per minute.

The bladder was full of tubercular ulcerations and a thickened right ureter could be felt. The right kidney was much enlarged and sensitive, reaching as low down as the crest of the ilium.

March 5, 1901, a nephrectomy was performed. There was about a pint of foul pus in the kidney, and great difficulty was experienced in separating the adhesions. As the patient was in bad shape and the operation had to be hastened, the ureter was cut off with the cautery about two inches below the kidney. She quickly improved to the extent that she was discharged in thirty-four days.

For over a year, however, she was said to have remained very miserable with the tubercular disease of her bladder. Within a few weeks I have heard from Dr. Gage that she is now in excellent health, and seemed to have recovered entirely.

I do not wish it understood, however, that I would advise to leave an infected ureter in the patient. I would simply cite this case as a proof how much Nature will do to throw off the disease when the original focus has been removed.

It is for this reason, also, that the writer doubts the assertion that bladder tuberculosis occurs with any frequency through the blood current, but rather by contiguity. Why otherwise should these patients get well?

The early and most frequent subjective symptoms are pain referred to the loin and iliac region of the diseased side, and later to the bladder. In Case I the patient referred the pains to the loin very early, while Cases I, III, and IV also showed the later pain in the bladder. Now and then they complain of pain along the course of the ureter, and this is so severe that I have known the appendix to have been removed by a prominent surgeon by misapprehension.

This symptom would also show that the infection of the bladder was a later stage of the disease.

The pain at urination always means an infection of the bladder. The infection is most frequent at the trigonum and at the meatus of the ureters. In the old cases, difficulty to retain urine, after the desire to pass it once comes on, means an infection of the neck of the bladder.

Hæmaturia should be always looked at with suspicion. While blood that comes from the kidney most commonly means malignancy or stone in the kidney, the fact that it may be tubercular should not be lost sight of. The following cases will illustrate the point in question. There being but three cases of all reported in this paper that showed this symptom besides Case I, already cited, I wish to draw attention to

CASE VI.—*Tubercular Bladder, Right Kidney, and Cervix Uteri; Hæmaturia; Temporary Recovery.*

Miss L. S., aged seventy-six years, single, complained in February, 1902, of severe pain at urinating, after having had pain in the right iliac region for some time. I had seen her on and off for twenty years for a movable right kidney. Her urine was examined frequently during this time, and on several occasions there was some albumen, never any casts, but always a low specific gravity.

An examination of the urine in February, 1902, showed pus and tubercle bacilli in large numbers. In June and July, 1902, she lost some blood from the vagina which came from a tubercular ulcer at the cervix. In July there was a sharp attack of haematuria. While in the country she improved rapidly, so that in November, 1902, she no longer had any discharge of blood from the vagina and no painful urination, though small quantities of pus were still found in the urine.

A relapse of the bladder symptom occurred in April of this year and lasted for a month. During this time tubercle bacilli were again discovered, but at the present writing she is again in good shape and has no trouble with her bladder.

The following very interesting case is one of haematuria.

CASE VII.—Tubercular Right Kidney and Ureter; Exsanguinating Haematuria coming from the Right Kidney; Right Lumbar Pain; Nephro-ureterectomy; Cured.

E. C., married, aged thirty-nine years, mother of six children, in poor health, was sent to St. Michael's Hospital November 7, 1898, for chronic cystitis by Dr. Hagerty. Since two years she has been unable to retain her urine for any length of time. There was much blood and pus in the urine. The endoscope showed the bladder to be uniformly red, almost like granulation tissue, but no ulcerations.

A vaginal cystotomy was done November 12, 1898, and the bladder drained. There was no blood for a year. November 1, 1899, she was again admitted, to close the fistula and to do a nephorrhaphy and appendectomy, having constant pain in the appendix and symptoms referring to the very movable right kidney. The fistula was closed by a flap operation. The appendix was removed through a lumbar incision and the kidney fixed. She was discharged well in four weeks, and remained well. Eighteen months later she gave birth to a healthy child.

During the next three years she was very well until May, 1902, when she had much pain in the right lumbar region, and of late there was a large amount of blood in her urine. The pain in the right kidney was most unbearable; she would have chills and fever for three and four days at a time. Her physician, Dr. Hagerty, again sent her to St. Michael's Hospital November 28, 1902. A search for tubercle bacilli was made in vain by Dr. Connelly. She gladly accepted the operation of removal of the right kidney, as no blood came from the left kidney by ureteral catheterization. A calculus was expected. On lifting the kidney out of the loin through the lumbar incision no stone was detected, but an immense thickened ureter, which was certainly thought to be tubercular. The kidney with the ureter down to the bladder was removed. At the present writing, May 17, the patient is very well; looking after her household duties, with seven children to look after. Her urine is normal.

The diagnosis of tubercular disease of the female urinary tract is by no means an easy one at all times. Now and then it is readily made.

Every case of pyuria should be examined for tubercular bacilli when the cause cannot readily be ascribed to some other infection. The sensitiveness of the bladder to the touch per vaginam is an important symptom in vaginal tuberculosis. As we pass the finger up the anterior wall of the vagina to the cervix and then direct it, with its palmar surface forward, to one and then to the other side, we may find a thickened ureter. The normal ureters can nearly always be felt as very thin cords converging towards the neck of the bladder and losing themselves little less than an inch above the internal opening of that organ. If the finger is placed at the side of the cervix and close to it, the outer edge of the finger will correspond to the location of the ureter.

The ureter, when it is thickened and inflamed by tubercular disease, becomes a very sensitive cord.

In the beginning, the small ulcerated surface is surrounded by small blisters, as a fine herpetic eruption might appear.

When these objective symptoms, coupled with such sub-

jeptive symptoms as have already been spoken of, present themselves, the diagnosis is absolute. We shall not always be able to find all symptoms, and many times will fail to demonstrate the tubercle bacilli. In the latter case the diagnosis becomes dubious.

The *prognosis* in tubercular disease of the urinary tract is usually considered a bad one. Nevertheless, there are cases that appear to get well and remain so for years. The following cases are examples in question.

CASE VIII.—Tubercular Bladder and Right Ureter; Pyuria with Many Tubercle Bacilli; Apparent Cure.

Miss M. O., aged eighteen years, was seen in 1891 with symptoms of bladder trouble, *i.e.*, frequent and painful urination. An examination of her urine showed many tubercle bacilli and pus, while the bladder contained many tubercular ulcers in the trigonum and the right ureter was sensitive and thickened. For some years she was under the care of the late Dr. Emma W. Edwards, and became very well. Later she was married and gave birth to a child. At the present time, twelve years after I first saw her, she considers herself well.

CASE IX.—Tubercular Right Kidney and Bladder; Pyuria with Many Tubercle Bacilli; Apparent Cure.

Miss F., single, aged thirty years, was taken sick with bladder symptoms in 1893. From then on she had frequent attacks of painful and frequent urination, and was often confined to her bed with pain. In 1895 she took up the training as a nurse. September 11, 1897, I saw her with Dr. Mead in an exceptionally acute attack of pain in the bladder. The urine was found to contain large quantities of pus and tubercle bacilli. Her temperature at that time was 104° F., and she gave one the impression of being a very sick woman.

The right kidney was prolapsed and very sensitive. Catheterization failed because of the extensive tubercular ulcerations of the bladder. For two years tubercle bacilli were constantly found in the urine, but since three years the urine has appeared perfectly normal. While she still has occasional pain in the bladder, there is no pus in the urine.

From 1897 to 1899 she was treated by Dr. Mead with cre-

sote, sandal-wood oil, and various tonics. Eggs and milk were an important part of her diet. At the present time she is suffering from some affection of the vocal cords, but no tubercular ulcerations are visible.

The very chronic course of the disease is well illustrated in the following case.

CASE X.—Tubercular Left Kidney and Ureter; Tubercular Cystitis.

About September, 1890, I saw Miss D., aged twenty-three years, a teacher by occupation, who in her early childhood had caries of the spine and is much deformed. For some months she complained of much and constant pain in the left lumbar and iliac region, with frequent urination. The pain at times was hardly bearable, and she often took paregoric to relieve it.

An examination showed an extensive tubercular ulceration between the openings of the ureters. The left ureter was considerably thickened, the right one less so, and the urine contained an occasional tubercle bacillus.

A general tonic treatment and irrigation of the bladder gave her some relief, so that she took up mission work, but had rather a miserable existence. Her condition gradually became quiescent, and in 1898 she took upon herself the care of a country home for crippled children. Here she led much of an out-door life, and at the date of this writing considers herself tolerably well, though I have not been able to see her nor examine the condition of her urine.

These are the only cases I have been able to follow for many years. Some cases prove fatal rather slowly, while in others general tuberculosis soon kills the patient.

CASE XI.—Symptoms of General Tuberculosis followed by Tubercular Right Kidney and Ureter and Ulceration of the Bladder; Death in a Few Years from General Tuberculosis.

Mrs. S. H. was sent to me October 7, 1897, by Dr. Lewis, of Morristown, who kindly gave me the following history: The patient had been sick more or less since six months. She complained of fatigue, painful and scanty menses, and irregular

fever, with chills. She was anaemic and losing flesh. Three months previous to her visit to me she had a slight cough and scanty expectoration, in which the bacteriologist could not find any tubercle bacilli. A second examination likewise proved negative.

About this time she began complaining at urination, which was painful at the end of the act, but not more frequent than usual. With this there was some pain in the loins and over the region of the bladder. Dr. Lewis reports pus, mucus, and occasionally blood in the urine at this time. On one occasion she had a real renal colic.

When seen by me, October 7, 1901, the bladder was sensitive to the touch, as was also the right ureter, which was much thickened as far as the finger could reach. The interspace between the ureters in the bladder was covered with small tubercular ulcerations. The urine was kindly examined by Dr. R. N. Connelly, who reported tubercle bacilli, pus, and fibrous tissue cells in great numbers, besides albumen and pus casts.

Her previous history indicating a general infection, a bad prognosis was made and a general tonic treatment advised. Dr. Lewis carried this out, giving her besides, for some months at a time, creosote. During 1899 and 1900 it seemed as if she was going to recover. Her bladder symptoms were much ameliorated and her general condition much improved. But later she relapsed, and died from general tuberculosis. Bacilli had been found in the sputum long before this. She died in the spring of 1901, or four years from the beginning of her illness.

The rapidly fatal cases in spite of operation are illustrated by the following:

CASE XII.—Tubercular Right Kidney, Ureter, and Bladder; Nephro-ureterectomy; Recovery from Operation; Death within Two Years from General Tuberculosis.

Mrs. E. W., aged thirty years, married, one child, presented herself October 26, 1901, in very poor health. The family history is reported as good. She has had constant pain in the right kidney followed by general weakness. She had no cough, but there was some suspicion of an apex difficulty. The urine was loaded with pus and tubercle bacilli. Upon catheterization, the

left kidney appeared normal. The right ureter was much thickened and the bladder covered with tubercular ulcerations.

Because of her great suffering and the evident progressive condition of the disease, her right kidney and ureter were removed, as in the foregoing cases. The ureter was accidentally torn off, but was soon found again and removed down to the bladder. How much the accident may have to do with her general infection I am unable to say. The wounds were closed with drainage, and the patient discharged in very good condition in four weeks. She remained comparatively well for some months, but then developed a cough, and died nearly one and a half years later from tuberculosis of the lungs.

In spite of the foregoing case, one can conscientiously recommend the operation of nephro-ureterectomy in those instances where the tubercular process is confined to the ureter and kidney, or that have originated in those organs, as such good results are shown by the cases already reported.

That cases do get well, or at least remain quiescent, is unquestionable. When operation is counterindicated, such treatment as is recommended for tuberculosis elsewhere should be instituted. Among those, fresh air, plenty of water, good, easily digested, and wholesome food, tonics, and such medicine like creosote, cystogen, and cod-liver oil find a useful field.

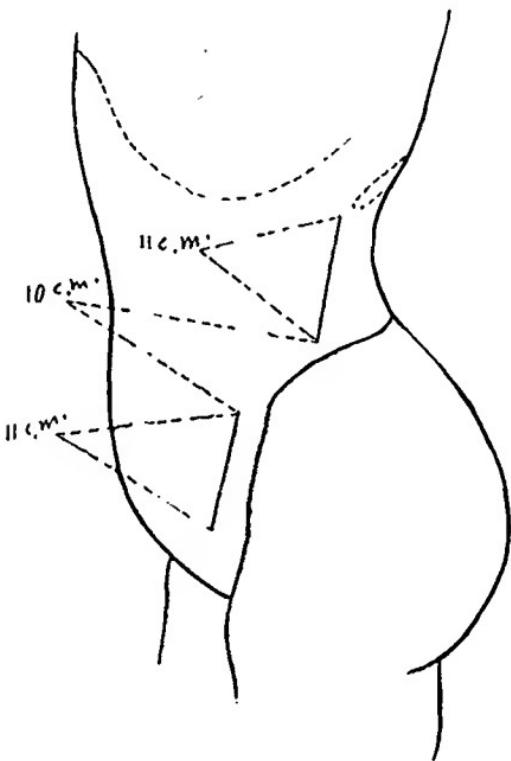
To finish a report of all my nephro-ureterectomies, the following two cases are herewith appended.

CASE XIII.—Tubercular Left Kidney, Ureter, and Bladder; Nephro-ureterectomy; Recovery from Operation.

Miss I. M. presented herself, at the suggestion of Dr. Charles Young, February 12, 1903. She was seventeen years old, single, had been well heretofore except when sick with typhoid two years ago. She also had albumen in the urine at that time. She began to have pain in the left lumbar and iliac region, which she dated from a fall in September, 1902. The pain gradually extended down into the left iliac and vaginal regions. Soon there was a constant desire to pass water. She gets up from three to seven times during the night for that purpose. An examination revealed that she had retro-left lateral position of the uterus, a very much thickened left ureter, and that her urine was loaded with

pus and tubercle bacilli. The right ureter was catheterized and nothing abnormal discovered. February 26 a nephro-ureterectomy was performed. Unfortunately, she became septic, but soon recovered from the acute symptoms after the use of Dr. R.

FIG. 2.



Case XIII, showing location of incisions for removal of ureter.

N. Connelly's antitoxin serum and a wide opening of the wound. There was left a fistulous tract in the latter part of May. At this same time she gained flesh rapidly, in spite of the fact that her urine contained pus. Tubercle bacilli were still found on June 18.

CASE XIV.—*Tubercular Left Kidney, Ureter, and Bladder; Nephro-ureterectomy; Death in Forty-eight Hours from Sepsis.*

A. G., aged nineteen years, single, father died of phthisis, general health is poor, entered St. Michael's Hospital March 2,

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TABLE OF SEVEN CASES OF COMPLETE NEPHRO-URETERECTOMY FOR TUBERCULOSIS.

No.	Name.	Age.	Social Condition.	Date of Operation.	Diagnosis before Operation.	Diagnosis after Operation.	Bacteriological and Microscopic Examination of Urine.	Early Symptoms.	Immediate Result.	Remote Result.	Remarks.
1 R.	27	Single.		May 24, 1890.	Tubercular bladder, left kidney and ureter.	The same.	Pus, tubercle bacilli, connective-tissue particles.	Pain in left loin and iliac region; later, painful urination.	Recovery.	Neither pus nor tubercle bacilli in the urine within a year.	Was married a year after the operation.
2 E. B.	22	Single.		April 9, 1901.	Tubercular bladder, right kidney and ureter.	The same.	Pus, tubercle bacilli, connective-tissue particles.	Pain in the right lumbar region; later, dysuria.	Recovery.	December 4, 1902, urine normal.	Is in perfect health; became septic after the operation, but recovered after some months.
3 S. S.	24	Married, two children.		June 28, 1901.	Tubercular bladder, right kidney and ureter.	The same.	Pus, tubercle bacilli, connective-tissue particles.	Pain in the right iliac region; later, dysuria.	Recovery.	May 28, 1903.	Had a normal pregnancy and labor eighteen months after operation.
4 E. W.	30	Married, one child.		October 30, 1901.	Tubercular bladder, right kidney and ureter.	The same.	Pus, tubercle bacilli, connective-tissue particles.	Painful urination.	Recovery.	Died in eighteen months from tubercular phthisis.	Never entirely recovered from her urinary symptoms, though she was much improved.
5 S. C.	39	Married, seven children.		December 1, 1903.	Calculus in pelvis of right kidney.	The same.	Blood in the urine in large quantity; no bacilli.	Pain in the right lumbar region.	Recovery.	May 17, 1903, is perfectly well.
6 T. M.	17	Single.		February 26, 1903.	Tubercular bladder, left kidney and ureter.	The same.	Tubercle bacilli, pus, connective-tissue particles.	Pain in the left iliac region; later, frequent urination.	Recovery.	June 18, 1902, urine contained some pus and tubercle bacilli.	The wound became septic, but in due time the girl got well.
7 A. G.	19	Single.		March 28, 1903.	Tubercular bladder, left kidney and ureter.	The same.	Pus and tubercle bacilli.	Pain in the left loin.	Recovery.	Septic, death in two days.

TABLE OF TWO CASES OF NEPHRECTOMY FOR TUBERCULOSIS.

No.	Social Condition.	Date of Operation.	Diagnosis before Operation.	Diagnosis after Operation.	Bacteriological and Microscopical Examination of Urine.	Early Symptoms.	Immediate Result.	Remote Result.	Remarks.
1	R. V. 35 Single.	March 5, 1901.	Tubercular bladder, right ureter and kidney.	The same.	Pus, tubercle bacilli, and tissue particles.	Pain in the right lumbar region.	Recovery.	Was well when last heard from in March, 1903.	The very miserable condition of the patient prevented a complete nephroureterectomy. Urine cleared up in a week; diagnosis was made by the pathologist only.
2	A. M. 44 Married.	January 29, 1903.	Probably cancer of the left kidney.	Tubercular pyelitis.	Blood in the urine coming from the left ureter.	Haematuria, pain in the left loin.	Recovery.	Well when last heard from.	

1903. Menstruation irregular, with some pain and scanty flow. She was hoarse, and had been so for some months, but no lesion of the vocal cords was discovered. For two years she has had pain in the left loin, and since three months complains of scalding on urinating and sharp shooting pain in the bladder at all times. She makes the impression of a patient suffering greatly. An examination was exceedingly painful, and she was therefore placed under ether for that purpose. There was a much thickened left ureter and tubercular ulcers in the lower posterior half of the bladder. March 28 the left kidney and ureter were removed down to the bladder. After the operation, the patient vomited incessantly; her temperature rose rapidly, and she died in less than forty-eight hours of acute sepsis.